









# First record of *Gargaphia paula* Drake, 1939 (Hemiptera, Tingidae) from Colombia, with a new host plant and an updated checklist of *Gargaphia* species in the country

JEAN GAMBOA<sup>1,2\*</sup>, CAROLINA FONTECHA<sup>2</sup>, ERIKA VALENTINA VERGARA-NAVARRO<sup>2,3</sup>,  
YENNIFER ANDREA CARREÑO-GUEVARA<sup>1</sup>, JOHN QUIROZ<sup>4</sup>, FRANCISCO SERNA<sup>2</sup>

1 Laboratorio de Entomología Universidad de la Amazonia (LEUA), Universidad de la Amazonia, Florencia, Caquetá, Colombia • JG: [j.gamboa@udla.edu.co](mailto:j.gamboa@udla.edu.co)  <https://orcid.org/0000-0002-8783-0175> • YACG: [y.carreno@udla.edu.co](mailto:y.carreno@udla.edu.co)  <https://orcid.org/0000-0001-7779-3633>

2 Museo Entomológico UNAB, Universidad Nacional de Colombia sede Bogotá, Bogotá D.C., Colombia • CF: [dcfontechaca@unal.edu.co](mailto:dcfontechaca@unal.edu.co)  <https://orcid.org/0009-0005-1866-4344> • EVVN: [evvergara@agrosavia.co](mailto:evvergara@agrosavia.co)  <https://orcid.org/0000-0002-8447-6844> • FS: [fjsernac@unal.edu.co](mailto:fjsernac@unal.edu.co)  <https://orcid.org/0000-0002-6143-9821>

3 Colección Taxonómica Nacional de Insectos “Luis María Murillo” (CTNI), Corporación Colombiana de Investigación Agropecuaria AGROSAVIA, Mosquera, Cundinamarca, Colombia

4 Museo Entomológico “Francisco Luis Gallego” (MEFLG), Universidad Nacional de Colombia sede Medellín, Medellín, Antioquia, Colombia • JQ: [jaquirozg@unal.edu.co](mailto:jaquirozg@unal.edu.co)  <http://orcid.org/0009-0008-1551-0405>

\* Corresponding author

**Abstract.** *Gargaphia paula* Drake, 1939 is recorded for the first time for Colombia in two extreme localities, one in the northern region of the country and the other in the southeast. Moreover, it was found on *Calopogonium mucunoides* Desv. (Fabaceae), a new host plant recorded for the species.

**Keywords.** Amazonia, distribution, host, lacebug, phytophagous

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## Introduction

Species of the genus *Gargaphia* Stål, 1862 (Tingidae, Tinginae, Tingini) are distributed in the Western Hemisphere (Drake and Ruhoff 1960), and while host plants for roughly half of the species are unknown, the families Fabaceae, Solanaceae, Malvaceae, Euphorbiaceae, Asteraceae, and Rosaceae constitute the most common host plants for *Gargaphia* spp. (Drake and Ruhoff 1965).

*Gargaphia paula* Drake, 1939 has previously been recorded from Brazil (Acre state), Costa Rica (Puntarenas province), Ecuador (Los Rios and Zamora-Chinchipe provinces), Panama (Canal Zone), and Peru (Tingo María) (Drake 1939; Drake and Ruhoff 1965; Guidoti et al. 2014). Host plants of *G. paula* include six

species of the genus *Arachis* L. (Fabaceae) and hybrids of those species (Guidoti et al. 2014).

## Methods

Two specimens, a male and a female of *Gargaphia paula*, were collected by FS from the underside of leaves of *Arachis pinto* Krapov. & W.C. Gregory (Fabaceae) in Florencia (Caquetá, Colombia). In another locality in the same city, 18 additional specimens of *G. paula* were collected by JG and M. Silva, a contributor researcher, on the same host plant. With the help of a fine-tipped paintbrush, the collected individuals were placed into a 30 mL plastic bottle containing 96% ethyl alcohol and taken to the Museo Entomológico UNAB in Bogota, and Laboratorio de Entomología Universi-



dad de la Amazonia (LEUA) in Florencia, Caquetá for identification, photographic registry, and curatorship. The curatorship of specimens was carried out following the protocols established in the collections of UNAB (Martínez-Alava and Serna 2015) and LEUA. Two and 18 specimens were deposited in UNAB and LEUA collections, respectively.

The preserved specimens were studied employing an Olympus SZ61 stereomicroscope at 90× magnification. *Gargaphia paula* was identified by comparing the new materials to the original description of the species by Drake (1939) and a photograph of the holotype available online (Smithsonian Institution, National Museum of Natural History 2023; <https://www.gbif.org/occurrence/1321645521>). Photographs were taken with a Leica M205A stereomicroscope with a built-in camera and a Hitachi TM4000Plus II environmental scanning electron microscope. A distribution map of *G. paula* in the neotropics was plotted with QGIS v. 3.26.2.

A complete and detailed search of the species was

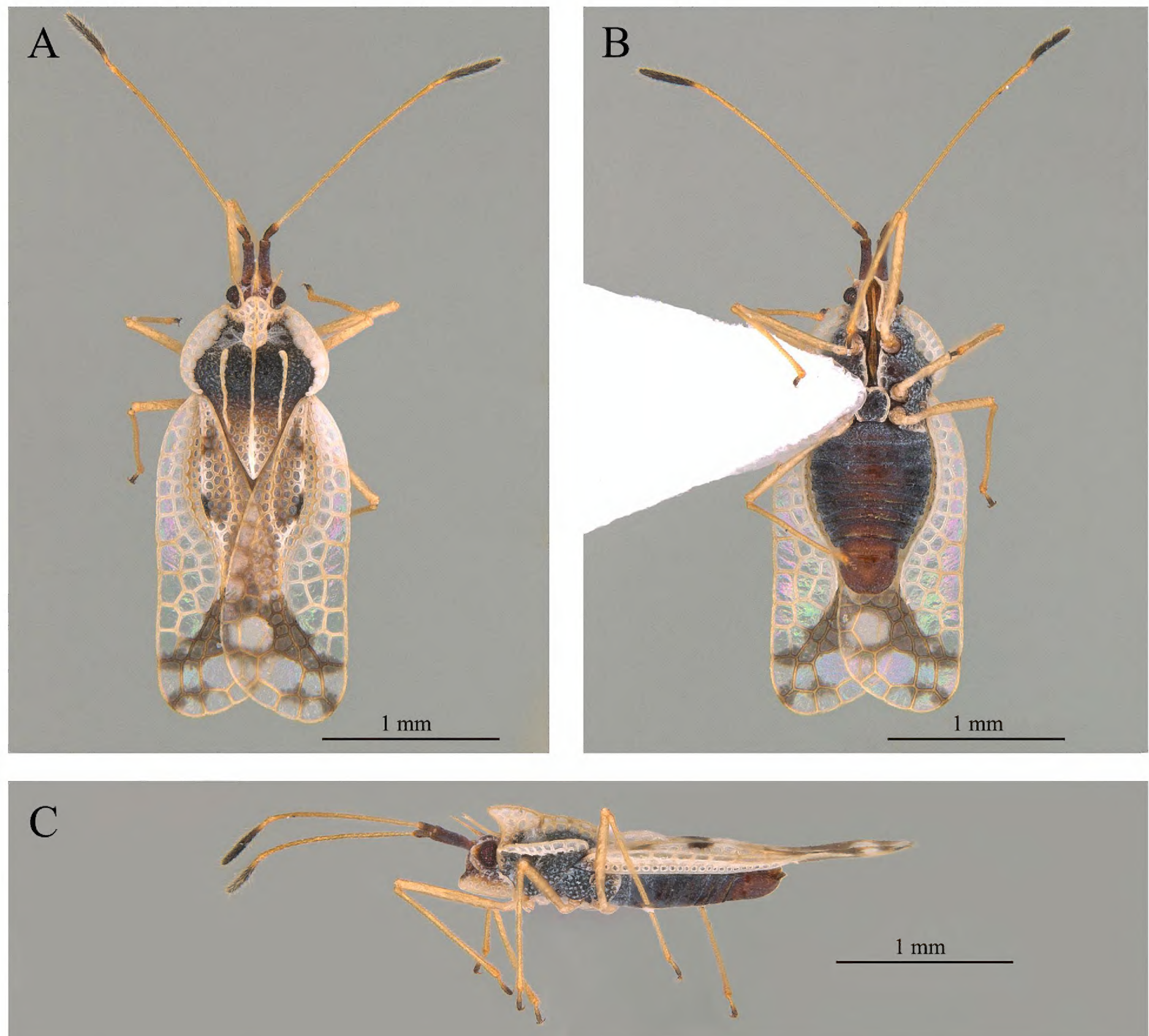
carried out in Colombian agricultural entomological collections, including Colección Taxonómica Nacional de Insectos “Luis María Murillo” (CTNI) of Agrosavia, finding 12 more specimens of *G. paula* collected in 1986 in the northern Caribbean municipality of Ciénaga, Magdalena, Colombia, with an identification labeled by Froeschner in 1987.

## Results

### *Gargaphia paula* Drake, 1939

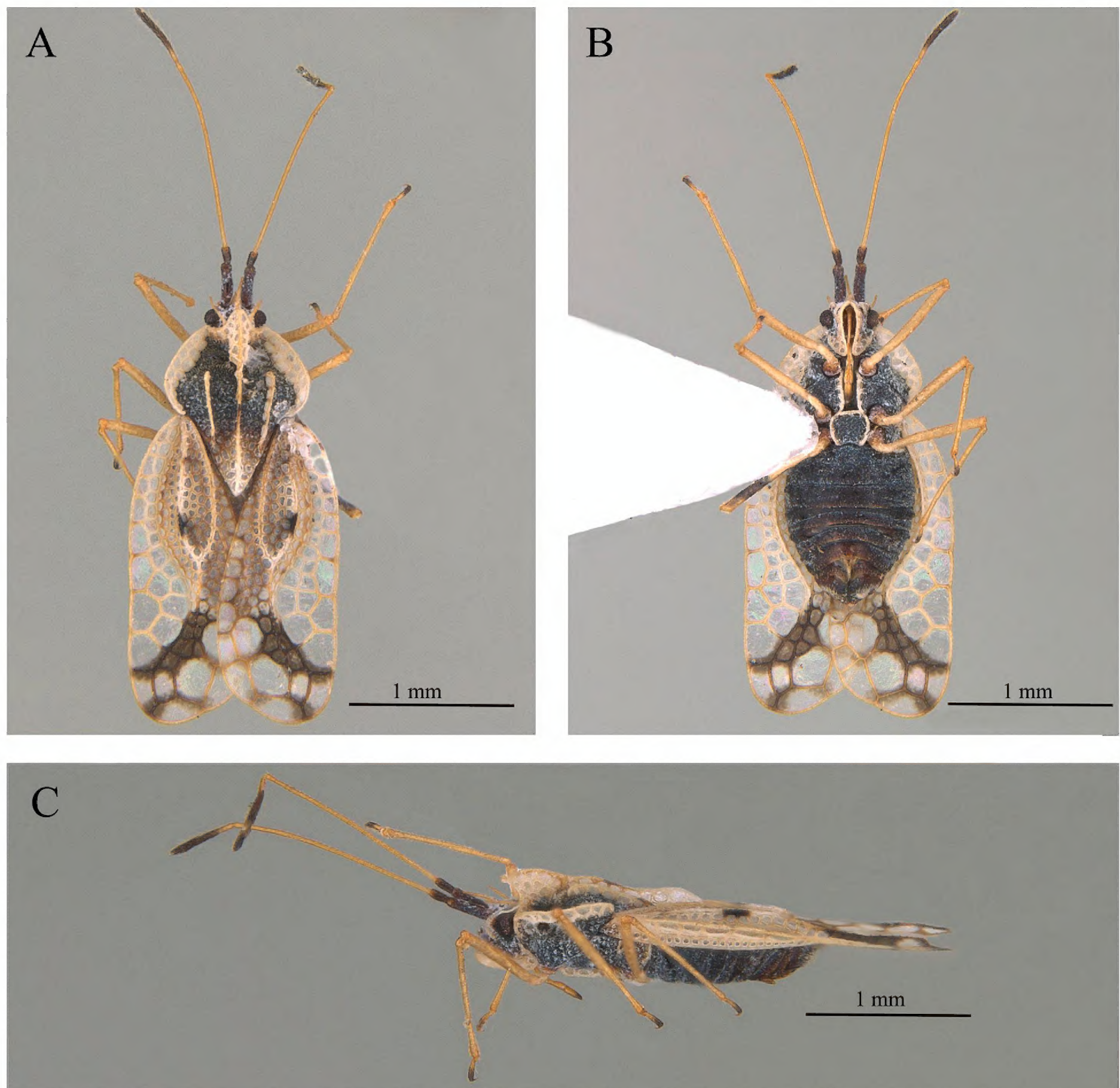
Figures 1–5

**Materials examined.** COLOMBIA – **Caquetá** • Florencia, Barrio Siete de Agosto, Terminal de transporte terrestre; 01°37'11"N, 075°36'35"W; 281 m alt.; 16.XI.2022; F. Serna leg.; manual collection, underside of leaves of *Arachis pinto* (Fabaceae), maní forrajero; UNAB 6531, 1 ♂ & 1 ♀ • Florencia; Barrio Porvenir, Universidad de la Amazonia Sede Principal; 01°37'09"N, 075°36'15"W; 242 m alt.; 05.V.2023; J. Gamboa & M. Silva leg.; manual collection, underside of leaves of *Arachis pinto*



**Figure 1.** *Gargaphia paula* Drake, 1939, male specimen from Colombia (LEUA 58428). **A.** Dorsal view. **B.** Ventral view. **C.** Lateral view.





**Figure 2.** *Gargaphia paula* Drake, 1939, female specimen from Colombia (LEUA 58417). **A.** Dorsal view. **B.** Ventral view. **C.** Lateral view.

(Fabaceae), maní forrajero; LEUA 58385, 58412–58428, 13 ♂ & 5 ♀. – **Magdalena** • Cienaga; X.1986; F. Posada leg.; manual collection, on leaves of *Calopogonium mucunoides* (Fabaceae), calopo; CTNI 3848, 5 ♂ & 7 ♀.

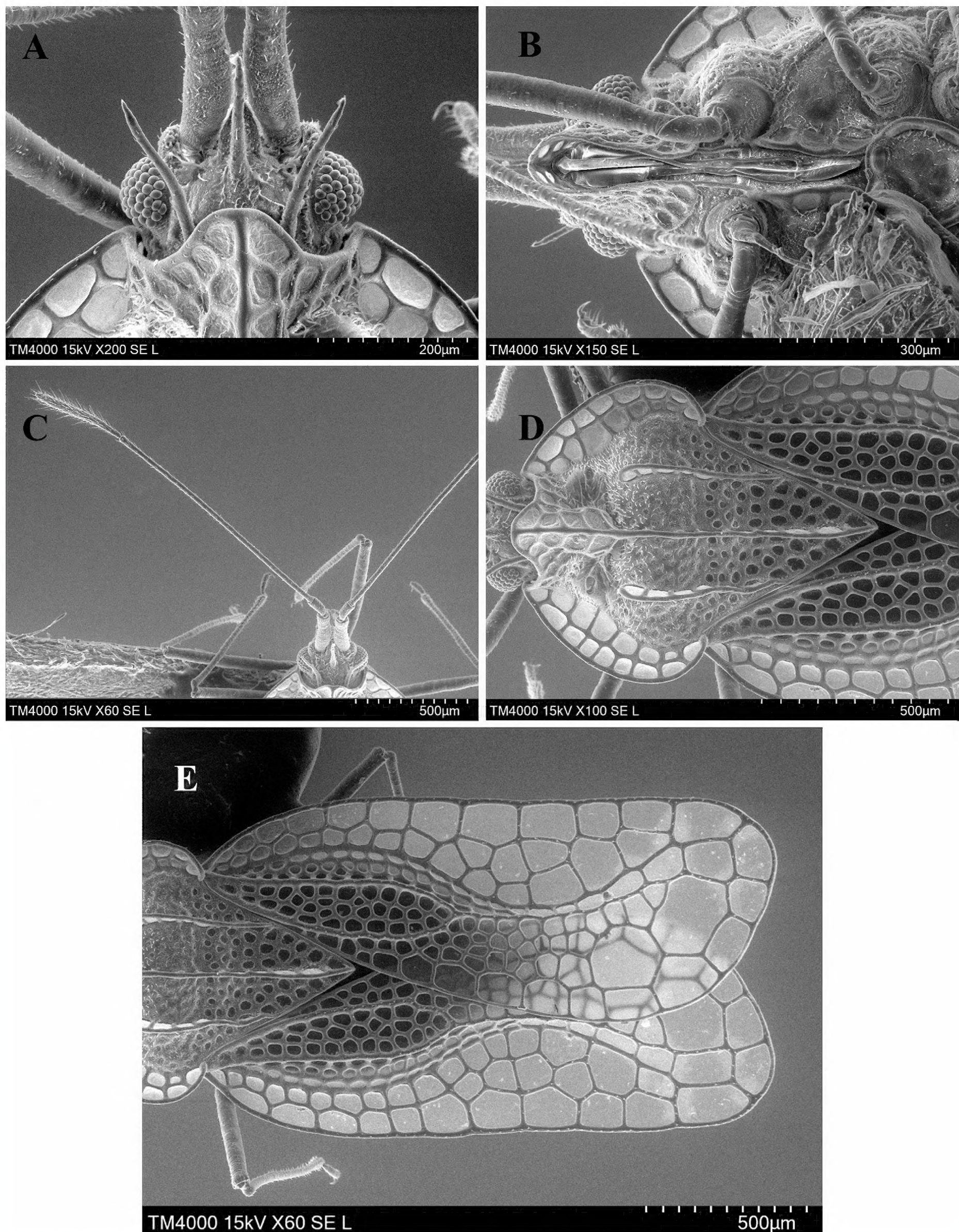
**Identification.** *Gargaphia paula* resembles *Leptopharsa lineata* (Champion, 1897), but the former has the ventral rostral channel interrupted posteriorly at the mesosternum level. Moreover, *G. paula* can be misidentified as *G. schulzei* Drake, 1954, due to their similar traits (Guidoti et al. 2014).

Specimens found in this survey match well the original description by Drake (1939: 68): “Elytra with an oblique fuscous band near the apex. Head black, with five, pale, testaceous spines, the median and hind pair longer. Antenna slender, moderately long; segments I and II black, the former stouter and three times as long as the latter; III long, testaceous, two and one-half times as long as IV; IV long, the distal three-fourths black.

Pronotum black, the triangular portion testaceous. Carinae foliaceous, testaceous, uniseriate; lateral carinae not quite extending as far forward as the base of the hood, slightly converging behind or parallel; median carina slightly more elevated. Hood moderately large, roof-shaped above, highest in front, projecting slightly forward in front. Paranota moderately broad, testaceous, biseriate, the outer margin rounded, and slightly convergent behind. Labium extending to the interrupted channel. Elytra very similar in appearance and markings to *L. lineata* (Champ.); costal are mostly biseriate, triseriate in widest part, and areola hyaline; subcostal area broad, triseriate in the widest part. Body beneath black” (Figs. 1–3).

In most specimens from Colombia, the lateral carina of the discal area possesses two maculae at the summit, a one-celled anterior testaceous and a two-celled black posterior one (Fig. 1–3).





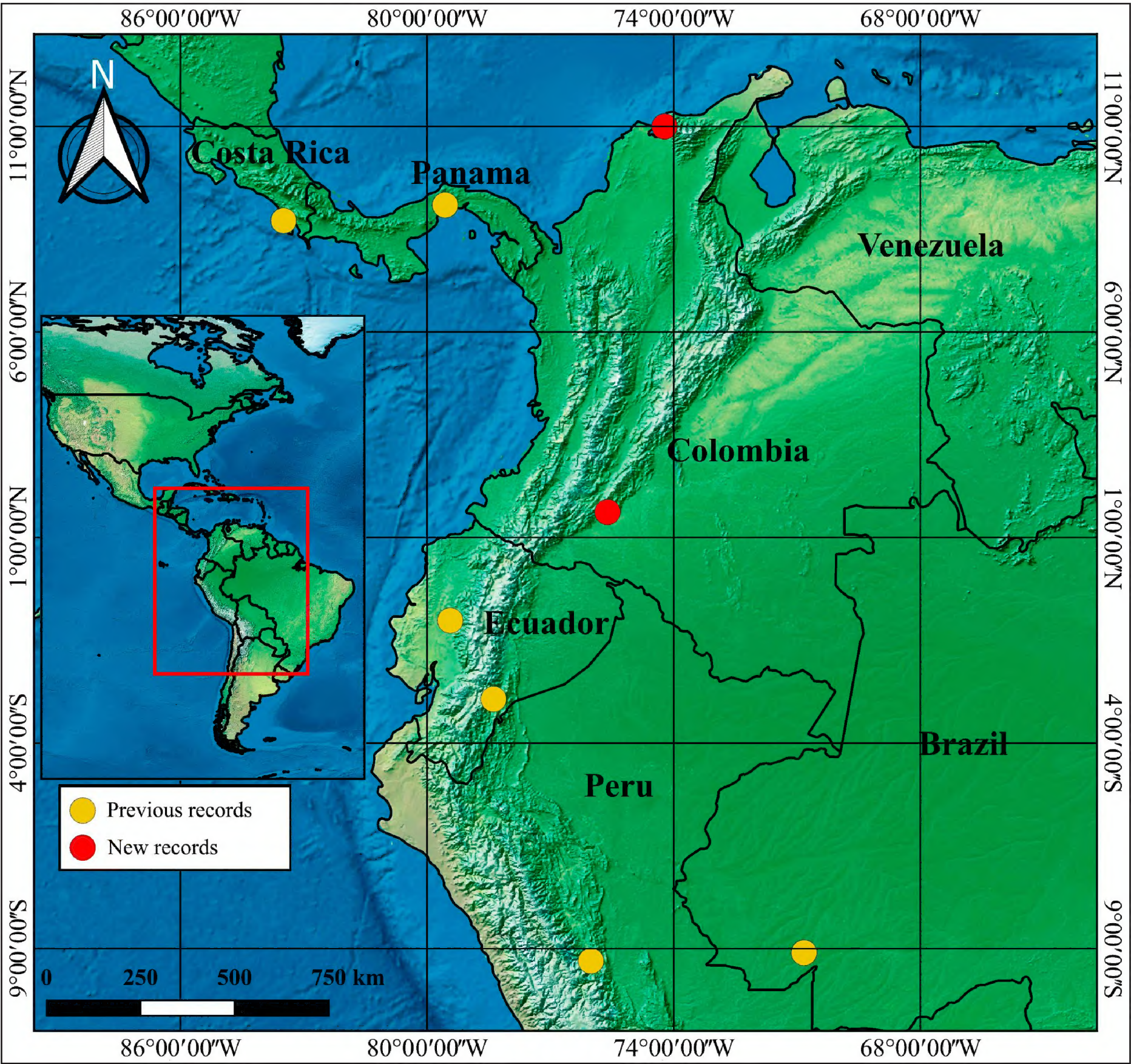
**Figure 3.** *Gargaphia paula* Drake, 1939, male specimen from Colombia (LEUA-58428). **A.** Head. **B.** Labium. **C.** Antenna. **D.** Paranota. **E.** Elytra.

## Discussion

Two new Colombian localities for *Gargaphia paula* from the towns of Cienaga and Florencia in the northernmost and southernmost regions of the country, respectively, are belong to two rather different biogeographic provinces, Guajira (Cienaga) and Napo (Florencia),

respectively (see Morrone 2014). These new records indicate that *G. paula* is a widely distributed species adapted to different environments and that it might be found throughout Colombian territory. These new records help fill gap in the distribution of *G. paula* between Central and South America (Fig. 4). Eleven species of the genus *Gargaphia* are now recorded from Colombia (Table 1).





**Figure 4.** Distribution of *Gargaphia paula* Drake, 1939.



**Figure 5.** Host plants of *Gargaphia paula* Drake, 1939. **A.** *Arachis pintoii* Krapov. & W.C. Greg. (Fabaceae). **B.** *Calopogonium mucunoides* Desv. (Fabaceae) (new host plant record).



**Table 1.** Checklist of *Gargaphia* species from Colombia and its host plants (based on Drake and Ruhoff 1965; Posada et al. 1976; Madrigal 1978; Gallego and Vélez 1992; Guidoti et al. 2014; and data from CTNI, LEUA, and UNAB).

Species	Distribution	Host plant
<i>Gargaphia acmonis</i> Drake & Hambleton, 1945	Peru, Colombia, and Suriname	<i>Abelmoschus esculentus</i> (L.) Moench (Malvaceae)
<i>Gargaphia concursa</i> Drake, 1930	Brazil and Colombia	<i>Croton</i> sp. (Euphorbiaceae), Annonaceae, and <i>Phaseolus vulgaris</i> L. (Fabaceae)
<i>Gargaphia crotonae</i> Drake & Hambleton, 1938	Brazil and Colombia	<i>Croton urucurana</i> Baill. (Euphorbiaceae), <i>Solanum</i> sp. (Solanaceae), and unidentified weed
<i>Gargaphia deceptiva</i> (Drake & Bruner, 1924)	British Guiana, Trinidad, Venezuela, and Colombia	<i>Ipomoea</i> sp. (Convolvulaceae)
<i>Gargaphia lunulata</i> Mayr, 1865	Argentina, Colombia, Brazil, Paraguay, and Uruguay	<i>Abelmoschus esculentus</i> (L.) Moench (Malvaceae), <i>Canavalia ensiformis</i> (L.) DC. (Fabaceae), <i>Cassia fistula</i> L. (Fabaceae), <i>Chorisia speciosa</i> A. St.-Hil. (Malvaceae), <i>Cnidoscolus</i> sp. (Euphorbiaceae), <i>Dolichos lablab</i> L. (Fabaceae), <i>Euphorbia heterophylla</i> L. (Euphorbiaceae), <i>Glycine max</i> (L.) Merr. (Fabaceae), <i>Gossypium arboreum</i> L. (Malvaceae), <i>Hibiscus esculentus</i> L. (Malvaceae), <i>Manihot utilissima</i> Pohl (Euphorbiaceae), <i>Meibomia adscendens</i> (Sw.) Kuntze (Fabaceae), <i>Passiflora caerulea</i> L. (Passifloraceae), <i>Passiflora</i> x <i>violacea</i> Loiseleur-Deslongchamps (Passifloraceae), <i>Passiflora edulis</i> Sims (Passifloraceae), <i>Phaseolus lunatus</i> L. (Fabaceae), <i>Phaseolus vulgaris</i> L. (Fabaceae), <i>Psidium</i> sp. (Myrtaceae), <i>Pyrus communis</i> L. (Rosaceae), <i>Ricinus communis</i> L. (Euphorbiaceae), <i>Rosa</i> sp. (Rosaceae), <i>Stigmaphyllon</i> sp. (Malpighiaceae), <i>Urena lobata</i> L. (Malvaceae), and <i>Zornia diphylla</i> (L.) Pers. (Fabaceae)
<i>Gargaphia nigrinervis</i> Stål, 1873	Colombia, Venezuela, Peru, Panama, Guatemala, Aruba, and Curacao	<i>Jatropha urens</i> L. (Euphorbiaceae), <i>Solanum</i> sp. (Solanaceae), and <i>Phaseolus vulgaris</i> L. (Fabaceae)
<i>Gargaphia opima</i> Drake, 1931	Peru, Colombia, and Bolivia	<i>Canavalia ensiformis</i> (L.) DC. (Fabaceae)
<i>Gargaphia paula</i> Drake, 1939	Costa Rica, Ecuador, Panama, Brazil, and Peru; Colombia (current work) (Fig. 4).	<i>Arachis pinto</i> i Krapov. & W.C. Greg. (Fabaceae) and <i>Calopogonium mucunoides</i> Desv. (Fabaceae) (current work, new host plant record) (Fig. 5)
<i>Gargaphia patricia</i> Stål, 1862	Mexico, Costa Rica, Guatemala, Panama, Colombia, Venezuela, and Argentina	Euphorbiaceae
<i>Gargaphia trichoptera</i> Stål, 1873	Colombia, Peru, and Brazil	No record
<i>Gargaphia sanchezi</i> Froeschner, 1972	Colombia	<i>Phaseolus vulgaris</i> L. (Fabaceae) and <i>Desmodium affine</i> Schltdl. (Fabaceae)

*Calopogonium mucunoides* (common names: kudzú, calopo) (Fig. 5) is recorded here as a new host plant of *G. paula*. This plant species is widely distributed in the tropics and farmers employ it to control weeds in plantations.

In Colombia and other tropical countries, *C. mucunoides* and *A. pinto*i (common name: maní forrajero) are associated with pastures of *Brachiaria* spp. as a strategy to recover degraded areas in extensive double-purpose cattle production systems (meat and milk). The phytophagy of *G. paula* on plants of *C. mucunoides* and *A. pinto*i causes a decrease in quantity and quality of available biomass for livestock feed.

The Naturalist portal (<https://www.inaturalist.org/observations/16094005>; accessed on 2023-9-19) shows an apparent previous record of *G. paula* for Colombia. However, this is of a specimen collected in Costa Rica (Ulloa, Heredia).

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**Author Contributions**

Conceptualization: JG, CF, JQ, EVVN, YACG, FS. Data curation: JG, YACG, EVVN, FS. Formal analysis: JQ, FS, EVVN, JG, CF. Methodology: EVVN, YACG, FS,



JG. Writing – original draft: JG, FS. Writing – review and editing: FS, JG. Visualization: FS, JG, YACG.

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